Agricultural Extension Service ● University of Minnesota

FACT SHEET

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Detergent decision guide to minimize water pollution

The type of sewage treatment your household wastes receive, and the destination of your treated sewage are the major factors you should consider in selecting your detergent. Many detergents and other laundry products contain phosphate—a nutrient that often stimulates algae and other plant growth in lakes and streams.

However, the complete elimination of phosphates from detergents and other laundry products cannot eliminate the water pollution hazard. Household wastes other than detergents contribute about 50 percent of the total phosphates in sewage.

With an understanding of how phosphates are removed from waste water, you can evaluate whether phosphates from your household, whatever their source, are harming lakes and streams.

The laundry recommendation chart is based on the following factors:

Sewage treatment

Treatment methods vary widely in their phosphate removal effectiveness. Tertiary treatment in a municipal plant can remove up to 99 percent of the phosphates. However, at the present time most sewage treatment plants do not provide tertiary treatment. More than 70 Minnesota lakes presently receive municipal sewage effluent without complete phosphate removal.

Soil will effectively trap effluent phosphates from a septic tank. Therefore, a properly designed and installed individual sewage disposal system will hold phosphates in a local soil area. However, do not discharge septic tank effluent into clean sands and gravels in the water table.

Destination of treated effluent

The type of water body receiving effluents high in nutrients varies in its sensitivity or reaction to this aquatic fertilizer. Lakes are more susceptible to damage than rivers or streams. Marsh areas are natural fertile or "nutrient trap" areas that can absorb more nutrients without damage.

Adding water containing soluble phosphorus to intermittent streams or open ditches usually causes little problem as rooted vegetables normally absorb the phosphates.

Water hardness

More detergent must be used with hard water than with soft water. The main function of phosphates is to soften the water.

Detergents and other laundry products

Detergents and other laundry products vary in their phosphate content. Look for the new labels on the boxes of detergents and other laundry products. These labels indicate the amount of phosphorus[1] in the product. The amount is usually given as percentage of phosphorus by weight and also the grams of phosphorus in the recommended use level.[2] This labeling is being done voluntarily by the manufacturers; it is expected that by the end of 1971, most will use this procedure.

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1 Phosphorus is present in soaps and detergents in the form of various chemical compounds called "phosphates." The phosphorus content of commonly used compounds can be determined by multiplying the numbers shown below by the percentage of a particular phosphate compound in the product:

Compound	Multiplier
STPP	0.253
TSPP	0.233
TKPP	0.194
TSP	0.189
Octadecene	0.093
CITSP	0.081

2 The laundry use level usually is based on a 6 to 8 pound load of moderately soiled clothes in moderately hard water (6 to 8 grains) and in an average volume of water (15 gallons for a top-loading, 8 gallons for a front-loading automatic washer).

EVALUATING YOUR SITUATION

Sewage treatment	Destination of treated effluent	Laundry recommendations
Septic tank systems This type of sewage treatment consists of a septic tank and soil absorption field. The recommendations are based on a properly designed and installed system, such as described in Extension Bulletin 304, Town and Country Sewage Systems.	Local soil area	Select any detergent or other laundry product that fits your water hardness and laundry needs. No phosphate water pollution hazard exists, since phosphates are effectively removed from the effluent by the soil . . . as long as the effluents are not discharged into clean sands or gravel in the water table.
Municipal or community sewage treatment plant with primary or primary and secondary treatment This type of treatment would apply to most residential areas that are served by sanitary sewers. The raw sewage is treated at a facility where solid material is removed along with some of the water soluable nutrients. Treated effluent, however, contains significant amounts of phosphates. You may get information on the type of sewage treatment you have in your community by checking with your municipal officials, or writing to the Minnesota Pollution Control Agency, 717 Delaware Street, SE, Minneapolis, Minnesota 55414.	Lake or chain of lakes	Select a soap or low or no phosphate detergent that performs effectively with your water. Using a home water softener (ion exchange) will allow you to use less detergent and low or no phosphate products. Phosphates are not removed in treatment. Lakes are sensitive to the amounts discharged; therefore, reduction in phosphate usage may help minimize the problem. (No phosphate detergents might possibly have detrimental effects on the environment, though.)
	River or stream	Because rivers and streams are not as sensitive to phosphate addition, laundry selection practices mentioned above are not as critical. Use of soft water is still recommended for efficient use of detergent and soap.
Municipal or community sewage plant with tertiary treatment This type of plant uses a third or tertiary stage of waste water treatment that essentially removes all phosphates. A system that uses a spray disposal of effluent on land also would fit in this category. Few systems of this type exist in Minnesota now.	Any body of water or land area.	Select any detergent or other laundry product that fits your water hardness and laundry needs. No phosphate water pollution hazard exists because the sewage treatment plant removes the phosphates.

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